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| George Boole | Research Project A: Renowned Mathematicians | Math 151 - Professor Klatt | Casey Carnnia |  |
| http://www.rugusavay.com/wp-content/uploads/2013/01/george-boole-quotes-1.jpg | | | | |

George Boole

Boole stood out from the list of mathematicians because of his relations to the Boolean concepts in computer science. His father, a shoemaker, was interested in practical science and taught him his first lesson in mathematics. This interest in science led to involvements with a social group in their English town of Lincoln called *Lincoln Mechanics' Institution*. The group promoted education and held discussions about science. After a while, Boole’s father became the librarian for the group and provided the conditions to allow Boole to discover and learn foreign languages and mathematics. Given access to books, combined with encouragements of his father Boole’s self-starting personality lead the way.

Boole had to support his parents and siblings early on. For a few years, he did this by teaching at village schools and when he turned twenty, he opened his own school in Lincoln. Sources I looked at about him want to point out that his work and responsibilities left him with little time to further his study but my personal feeling is that the daily grind with students and rehashing the basics probably contributed to insights that worked in his advantage.

Foundations of Boole’s interest in math were as a tool to solve mechanical problems in instrument making. This practical focus evolved into his many papers; one in particular one on differential equations which gained him the Gold Medal of The Royal Society of London. His talent in breaking down a problem into smaller parts and using algebraic formulas to move toward a solution is the basis for Boolean logic we use in computers today. This allowed for logical problems of sentences and words to be presented as algebraic problems, which are eventually solved mechanically. The general idea of classifying objects into sets and replacing the given set with a symbol somehow (my understanding of it is very limited) made 0 and 1 a special set of numbers called idempotent numbers, or numbers that do not changed when multiplied by themselves. In what he referred to as “The Rule of 0” in his book *The Laws of Thought* Boole states that an argument is valid if and only if after writing it as an equation and restricting the values for the symbols to only 0 or 1 we arrive at a valid equation in algebra. Boolean algebra correlates the operation of multiplication to the word “AND” and addition to the word “OR”.

With the industrial revolution came the use of electricity, a perfect fit for the Boolean logic system. Dividing an abstract problem into its elemental parts that can only be allocated values of 0 or 1 and evaluating the parts in order to validate the larger problem is time-consuming and cumbersome. But, the mechanical system of evaluation combined with speed of electrical circuits make Boolean logic viable. George Boole’s self-educated research method affords us this luxury.

Works Cited

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